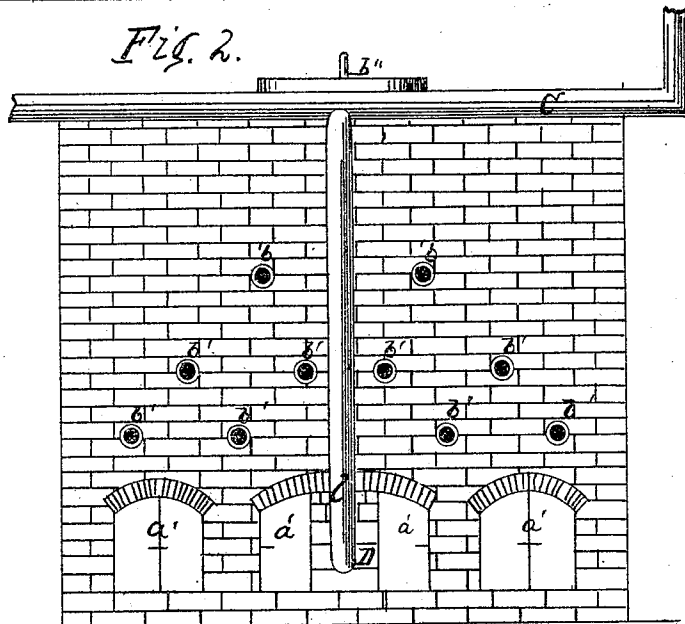
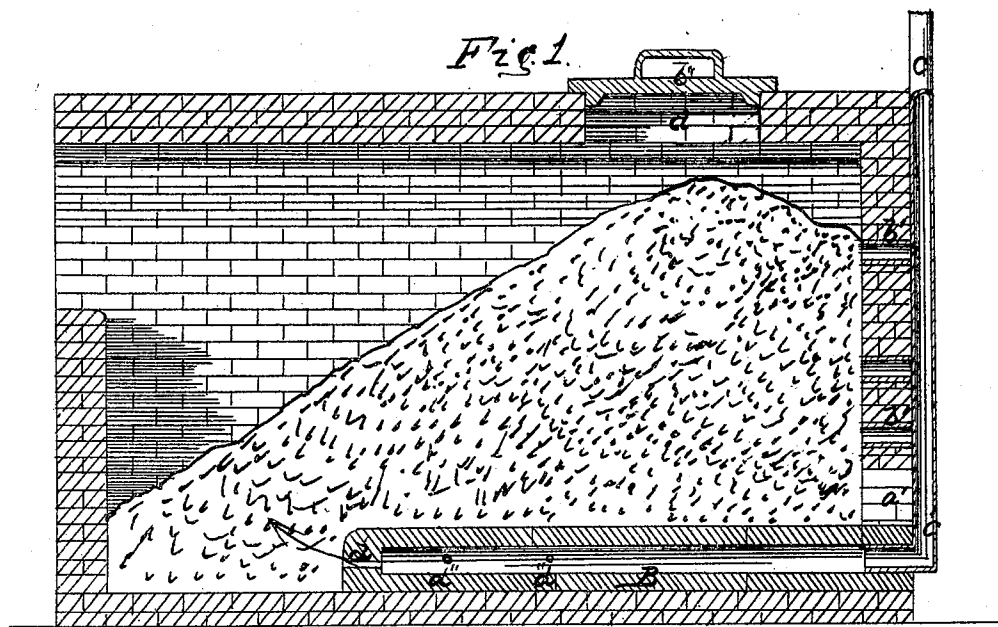


H. Speeler.

Heating Pottery-Ovens &c.

N^o 72694

Patented Dec. 24, 1867.



Witnesses:
 Benj. Morison Inventor = Henry C. Speeler
 Wm. H. Morison

United States Patent Office.

HENRY SPEELER, OF TRENTON, NEW JERSEY.

Letters Patent No. 72,694, dated December 24, 1867.

IMPROVEMENT IN HEATING POTTERY-OVENS AND OTHER LIKE FURNACES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HENRY SPEELER, of Trenton, in the county of Mercer, and State of New Jersey, have invented a new and useful Mode of Intensifying the Heat in Furnaces; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a central vertical longitudinal section of the fire-chamber of a furnace, having my invention applied thereto; and

Figure 2 a front elevation of the same—

Like letters of reference indicating the same parts when in the different figures.

The nature of my invention consists in discharging and using superheated steam in the mass of the ignited fuel in the furnace which superheats it, substantially in the manner hereinafter described, for the purpose of more effectually and rapidly consuming the carbon and hydrogen, and therefore intensifying the heat generated in the said furnace.

Referring to the drawings, A B is the fuel or fire-chamber of a furnace without a grate, C C' the steam-supplying pipes connected therewith, and D the steam-receiving case or tunnel, in which the said steam is superheated, and from which it is discharged continuously into the mass of the ignited fuel, E. The furnace has openings, *a' a'*, in the front wall, which are fitted with close, swinging doors, for the purpose of affording facility in withdrawing the ashes, atmospheric air being admitted to the fuel E through a series of small air holes, *b' b'*, in the front wall, at points above the ash-doors, and the fuel E introduced by dropping it through a large opening, *a''*, in the top or roof of the furnace, the said opening being fitted with a removable cover, *b''*. The superheating-case D is a tunnel, made of fire-brick material, and has one end opening through the front wall of the furnace, so as to connect with the steam-supplying pipe C', and also extends back along over the longitudinal centre of the floor of the fire-chamber E, about two-thirds, more or less, of the length of the latter, (see fig. 1.) Its inner end is closed steam-tight, with the exception of a very small exit-hole, *d'*, through its closed end, and two or more like holes, *d'' d''*, made laterally through the inner end of the said tunnel, for the discharge of the superheated steam, in thin streams, into the fuel E. The tunnel D is supported firmly, at about six or eight inches, more or less, above the floor of the fire-chamber A B, by means of fire-bricks, or otherwise, so as to subject it to as much of the heat of the combustibles as may be required to superheat the steam without fusing the tunnel. The steam is introduced into the tunnel D, from any suitable boiler, by means of steam-pipes, C C', connecting the same together, so that a full supply of the steam will be afforded to the tunnel D, as the said steam becomes superheated therein, and continuously discharged therefrom through the holes *d d''*, into the mass of the incandescent fuel E, as indicated by the arrows in fig. 1.

In the operation of my invention, as described, the atmospheric air, entering through the holes *b' b'*, gives ignition and the usual support to the combustion of the fuel E, until the case or trunk D has become sufficiently heated to superheat the steam passing through it, and when this is effected, the streams of superheated steam discharged from the trunk D, through the small exit-holes *d' d''*, become decomposed, and the hydrogen instantly consumed with the volatilized carbon of the fuel, by the resultant oxygen, and the oxygen of the atmospheric air entering through the holes *b' b'*, thus consuming all the combustible matter, and producing the most intense degree of heat, while all the light and rising incombustible matter of the fuel escapes with the draught through the main flue of the furnace to the chimney.

This is a very important invention, as the heat produced with a given amount of coal is much greater than heretofore, and is so intense that the usual "clinkers" are prevented, or rapidly reduced almost to a powder, and, with the ashes, can be easily withdrawn through the openings *a' a'*, the incandescent fuel alone forming, as it does, an arch, which supports itself and the fuel above in the mean time, and thus allows the operation to be effected without the aid of grate-bars. There is, therefore, a saving in coal, which I find, by experience, to be at least thirty-three per cent., and also a great saving in the labor and time heretofore required in removing the clinkers and ashes.

My invention is peculiarly adapted to furnaces in the manufacture of crockery-ware, fire-brick, and similar manufactories, for clay, porcelain, and the like, and the within-described furnace is substantially the same as those used in said manufactories.

What I claim, and desire to secure by Letters Patent, is—

A steam-pipe, in combination with a "fire-mouth," for heating pottery-ovens, kilns, and for other like ovens, substantially as described.

HENRY SPEELER.

Witnesses:

BENJ. MORISON,
W. H. MORISON.